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EXAMINER

ARANCIBIA, MAUREEN GRAMAGLIA

ART UNIT	PAPER NUMBER
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1763

DATE MAILED: 09/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/646,528

Applicant(s)

COLLINS ET AL.

Examiner

Maureen G. Arancibia

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 March 2006 and 15 June 2006.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-58 is/are pending in the application.
- 4a) Of the above claim(s) 11, 13-28, 34-48 and 54-58 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10, 12, 29-33 and 49-53 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 09/03; 11/03; 04/04.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☒ Other: 10S 05/04; 03/05; 05/05; 11/05; 08/06

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Species V in the reply filed on 15 June 2006 is acknowledged.
2. Claims 11, 13-28, 34-48, and 54-58 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 17 March 2006.

Specification

3. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: Specifically, recitation in Claim 49 of an "insulating layer insulating said conductive insert from said conductive base plate" lacks antecedent basis in the specification.

Claim Objections

4. **Claim 12 objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim.** Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Specifically, Claim 1 already recites "a supply of process gas for furnishing to said gas distribution devices a process gas" in Lines 18-19, so the recitation in dependent Claim 12 of "a gas supply containing said process gas" appears to fail to further limit independent Claim 1.

5. **Claims 50 and 51 are objected to because of the following informalities:** it appears that Line 5 of Claim 50 should be corrected to read "lift pin assembly and said *conductive wafer support plate*." Claim 51 is objected to due to its dependence on Claim 50. Appropriate correction is required.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

7. **Claims 49-51 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.**

Specifically, the terms "high dielectric filler" and "high breakdown voltage" in claims 49-51 are relative terms which render the claims indefinite. The terms "high dielectric filler" and "high breakdown voltage" are not defined by the claims, the specification does not provide standards for ascertaining the requisite degrees, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. For the purposes of the following examination on the merits, "a high dielectric filler having a high breakdown voltage" has been interpreted as referring to a dielectric material. Clarification and/or correction are required.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 1-10, 12, and 29-33 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent 5,571,366 to Ishii et al.

In regards to Claims 1-10, 12, and 29-33, Ishii et al. teaches a inductively coupled plasma apparatus (Figure 1), comprising an enclosure 2 comprising a sidewall, a base, and a ceiling and defining a chamber; a workpiece support pedestal 4 within the chamber having a workpiece support surface facing said ceiling and defining a process region extending generally across said wafer support pedestal; a gas distribution apparatus 20 comprising plural devices (*holes* 23) near the ceiling of the enclosure, as broadly recited in the claims; a gas supply 27a, 27b containing the process gas (Column 6, Lines 10-11); an inductively coupled source power applicator 6 comprising at least a coiled conductor having an axis of symmetry coinciding with an axis of symmetry of the workpiece support pedestal (Figure 1; Column 4, Lines 24-25); an RF plasma source power generator 7 coupled to said inductively coupled source power applicator for inductively coupling RF source power into said process zone; and an RF bias generator 19 having an RF bias frequency of about 2 MHz (Column 5, Lines 56-58) coupled to a workpiece support pedestal 4. (Figure 1; Column 4, Line 15 - Column 6, Line 16)

It has been held that a claim containing a “recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus” if the prior art apparatus teaches all the

structural limitations of the claim. *Ex parte Masham*, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987)

In this case, the plasma reactor taught by Ishii et al. includes all of the structural limitations of Claims 1-10, 12, and 29-33, and would be structurally capable of performing plasma immersion ion implantation, based on the process settings. The gas distribution apparatus taught by Ishii et al. would be inherently capable of introducing process gas containing a species to be ion implanted into a layer of the workpiece. The RF bias with a frequency of about 2 MHz coupled to the workpiece support pedestal taught by Ishii et al. would inherently meet the limitations of Claims 2-4 and 29-33, including that the RF bias power generator can control a sheath voltage across a plasma sheath overlying the workpiece support pedestal, depending on the other process settings of the plasma reactor. Moreover, the frequency of about 2 MHz meets the limitations recited in Claims 5-8. The bias voltage would be capable of corresponding to an implantation depth to which a species is to be implanted into a layer, again based on the other process settings, if the apparatus taught by Ishii et al. were used for the recited intended use of plasma immersion ion implantation.

This rejection is based on the fact the apparatus structure taught above has the inherent structural capability of being used in the manner intended by the Applicant. When a rejection is based on inherency, a rejection under 35 U.S.C. 102 or U.S.C. 103 is appropriate. (See *In re Fitzgerald* 205 USPQ 594 or MPEP 2112).

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. **Claims 49 and 50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishii et al. in view of U.S. Patent 5,542,559 ('559) to Kawakami et al. (from Applicant's IDS) and U.S. Patent Application Publication 2002/0036881 to Shamouilian et al.**

The teachings of Ishii et al. were discussed above.

Ishii et al. teaches that the workpiece support pedestal comprises a conductive wafer support plate 13; a grounded conductive base plate (bottom of chamber 2), as broadly recited in the claim, forming at least a void between said support and base plates; and a dielectric filler material 3 (*ceramic*) filling the void between the support and base plates. (Figure 1; Column 4, Lines 15-21 and Column 5, Lines 31-42)

Ishii et al. does not expressly teach that the workpiece support pedestal further comprises a side wall around said support and base plates forming at least a void between said side wall and said support and base plates; and dielectric filler material filling said void.

'559 to Kawakami et al. teaches a workpiece support pedestal comprising a conductive wafer support plate 31 (Column 5, Lines 19-20); a grounded conductive base plate and a side wall around said support and base plates forming at least a void

between said side wall and said support and base plates (*conductive grounded component 41 forms both a base plate and side wall, as broadly recited in the claim;* Column 5, Lines 19-33); and dielectric filler material 4 filling said void (Column 5, Lines 27-29). (Figure 1)

It would have been obvious to one of ordinary skill in the art to modify the wafer support pedestal taught by Ishii et al. to form a side wall around said support and base plates forming at least a void between said side wall and said support and base plates, and dielectric filler material filling said void, as taught by '559 to Kawakami et al., as an art-recognized equivalent formation of a grounded chamber wall, insulated from the conductive wafer support plate. (ex. '559 to Kawakami et al., Column 1, Lines 24-28) It has been held that an express suggestion to substitute one equivalent component or process for another is not necessary to render such substitution obvious. *In re Fout*, 675 F.2d 297, 213 USPQ 532 (CCPA 1982).

The combination of Ishii et al. and '559 to Kawakami et al. does not expressly teach the bias power coupling structure recited in Claim 49.

Shamouilian et al. teaches a workpiece support pedestal (Figures 6 and 8a) comprising a conductive insert 345 coupled to a bias power generator 145 and a conductive female receptacle 375 for tightly receiving said conductive insert, said conductive female receptacle being connected to a conductive wafer support plate 105, said conductive insert and conductive female receptacle extending through a base plate 190 to the conductive wafer support plate 105, and an insulating layer 380 insulating the conductive insert from the base plate. (Paragraphs 27, 70, 71)

It would have been obvious to one of ordinary skill in the art to modify the workpiece support pedestal taught by the combination of Ishii et al. and '559 to Kawakami et al. to include the bias power coupling structure as taught by Shamouilian et al. The motivation for making such a modification, as taught by Shamouilian et al. (Paragraphs 68-71), would have been to form a reliable connection between the bias power generator and the conductive wafer support plate while electrically isolating the power supplying member from the other components of the chuck.

The combination of Ishii et al., '559 to Kawakami et al., and Shamouilian et al. just discussed does not expressly teach the lift pin assembly recited in Claim 50.

However, Shamouilian et al. further teaches that the workpiece support pedestal further comprises at least one lift pin assembly (lift pins 160a, 160b) which extends through base plate 190 and conductive wafer support plate 105, as broadly recited in the claim (Figure 6), an axial void between the lift pin assembly and the conductive wafer support plate, and a dielectric filler material 380 within the void. (Figure 6; Paragraph 71)

It would have been obvious to one of ordinary skill in the art to further modify the combination of Ishii et al., '559 to Kawakami et al., and Shamouilian et al. to include the lift pin assembly as taught by Shamouilian et al. The motivation for doing so, as taught by Shamouilian et al. (Paragraphs 28 and 71), would have been to provide lift pins to raise and lower the workpiece from the pedestal, while preventing the formation of a plasma glow discharge within the holes through which the lift pins extend.

12. Claim 51 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ishii et al. in view of '559 to Kawakami et al. and Shamouilian et al. as applied to Claim 50 above, and further in view of 6,558,508 ('508) to Kawakami et al. and U.S. Patent Application Publication 2002/0053513 to Stimson et al.

The teachings of Ishii et al., '559 to Kawakami et al., and Shamouilian et al. were discussed above.

The combination of Ishii et al., '559 to Kawakami et al., and Shamouilian et al. does not expressly teach a fastening bolt as recited in Claim 51.

'508 to Kawakami teaches that a fastening bolt 34 is provided through all of the plates comprising a workpiece support pedestal 3. (Figure 2)

It would have been obvious to one of ordinary skill in the art to modify the workpiece support pedestal taught by the combination of Ishii et al., '559 to Kawakami et al., and Shamouilian et al. to provide a fastening bolt through all of the plates comprising the workpiece support pedestal, as taught by '508 to Kawakami et al. The motivation for making such a modification, as taught by '508 to Kawakami et al. (Column 5, Lines 59-63), would have been to make the plates comprising the workpiece support pedestal freely removable from one another.

The combination of Ishii et al., '559 to Kawakami et al., Shamouilian et al., and '508 to Kawakami et al. does not expressly teach that a dielectric material surrounds a portion of the bolt within the conductive wafer support plate.

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Stimson et al. teaches that a fastening bolt 420 that is "RF hot" should be partially surrounded by partially surrounded by dielectric material 422 (Figure 4; Paragraph 30).

It would have been obvious to one of ordinary skill in the art to further modify the workpiece support pedestal taught by the combination of Ishii et al., '559 to Kawakami et al., Shamouilian et al., and '508 to Kawakami et al. to surround the portion of the bolt within the conductive wafer support plate, which bolt would be "RF hot" due to the RF bias power supply connected to the conductive wafer support plate, with dielectric material. The motivation for doing so, as taught by Stimson et al. (Paragraph 30), would have been to guard against electrical contact between the bolt and another conductor.

13. Claims 52 and 53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishii et al. in view of U.S. Patent 5,935,373 to Koshimizu.

The teachings of Ishii et al. were discussed above.

In regards to Claims 52 and 53, Ishii et al. does not expressly teach that the RF source power generator and the RF bias generator can comprise first and second pulsed RF supplies in a push-pull relationship.

Kohsimizu teaches that an RF power source generator coupled to a source power applicator 112 for inductively coupling RF source power into a chamber 102 and an RF bias power generator connected to a workpiece support pedestal 106 can comprise first and second pulsed RF supplies, and that timing of the pulse of the bias pulse supply can be set as desired (*optimally controlled*). (Column 6, Line 46 - Column 7, Line 17)

It would have been obvious to one of ordinary skill in the art to modify the apparatus taught by Ishii et al. to have the RF source power generator and the RF bias generator can comprise first and second pulsed RF supplies, with the timing of the bias pulse supply being freely controllable, as taught by Koshimizu. The motivation for making such a modification, as taught by Koshimizu (Column 7, Lines 1-17), would have been to control the deposition time and ion impact time to the substrate to be processed and to reduce charge-up of the substrate.

Due to the timing of the bias pulse supply being freely controllable, the apparatus taught by the combination of Ishii et al. and Koshimizu would be structurally capable of having the source pulse RF supply and the bias pulse RF supply in a push-pull relationship. It has been held that a claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. *Ex parte Masham*, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987)

Double Patenting

14. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

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Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

15. Claims 1-8, 10, 12, 29-33, 52, and 53 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-5, 44-47, and 52-58 of copending Application No. 10/646,467 ('467). Although the conflicting claims are not identical, they are not patentably distinct from each other because:

The corresponding claims of '467, while reciting a method, recite all of the structural limitations of the instant claims, and thus render them obvious:

Claims 1-4 and 12 are rejected over Claims 1-4 of '467. Claims 5-8 are rejection over Claims 55-58 of '467. Claim 10 is rejected over Claim 5 of '467. Claims 29-33 are rejected over Claims 52-54 of '467. Claims 52 and 53 are rejected over Claims 44-47 of '467.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

16. Claims 1-8, 10, 12, and 29-33 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1 and 13-22 of copending Application No. 10/646,460 ('460). Although the conflicting claims are not identical, they are not patentably distinct from each other because:

The corresponding claims of '460, recite all of the structural limitations of the instant claims, and thus render them obvious:

Claim 1 is rejected over Claim 1 of '460. Claims 2-4 are rejected over Claims 13-15 of '460. Claims 5-8 are rejected over Claims 19-22 of '460. Claim 12 is rejected over Claim 2 of '460. Claims 29-33 are rejected over Claims 16-18 of '460.

The apparatus recited in Claim 1 of '460 is considered to be structurally capable of performing the intended use recited in instant Claim 10 of having the bias voltage correspond to an implantation depth to which a species is to be implanted in a layer, based on the structural features recited in Claim 1. It has been held that a claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. *Ex parte Masham*, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987)

17. Claims 52 and 53 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over Claim 1 of copending Application No. 10/646,460 ('460) in view of Koshimizu.

Claim 1 of '460 was discussed above.

In regards to Claims 52 and 53, Claim 1 of '460 does not expressly teach that the RF source power generator and the RF bias generator can comprise first and second pulsed RF supplies in a push-pull relationship.

Kohsimizu teaches that an RF power source generator coupled to a source power applicator 112 for inductively coupling RF source power into a chamber 102 and an RF bias power generator connected to a workpiece support pedestal 106 can comprise first and second pulsed RF supplies, and that timing of the pulse of the bias

pulse supply can be set as desired (*optimally controlled*). (Column 6, Line 46 - Column 7, Line 17)

It would have been obvious to one of ordinary skill in the art to modify the apparatus taught by Claim 1 of '460 to have the RF source power generator and the RF bias generator can comprise first and second pulsed RF supplies, with the timing of the bias pulse supply being freely controllable, as taught by Koshimizu. The motivation for making such a modification, as taught by Koshimizu (Column 7, Lines 1-17), would have been to control the deposition time and ion impact time to the substrate to be processed and to reduce charge-up of the substrate.

Due to the timing of the bias pulse supply being freely controllable, the apparatus taught by the combination of Claim 1 of '460 and Koshimizu would be structurally capable of having the source pulse RF supply and the bias pulse RF supply in a push-pull relationship. It has been held that a claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. *Ex parte Masham*, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987)

This is a provisional obviousness-type double patenting rejection.

18. Claim 9 is provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over Claim 1 of copending Application No. 10/646,467 ('467) in view of Ishii et al., or alternatively over Claim 1 of copending Application No. 10/646,460 ('460) in view of Ishii et al.

Claim 1 of each of '467 and '460 was discussed above.

In regards to Claim 9, neither expressly teaches that the gas distribution apparatus comprises plural devices near any of the interior surfaces of the enclosure recited in the claim.

Ishii et al. teaches a gas distribution apparatus 20 comprising plural devices (*holes* 23) near the ceiling of the enclosure 2, as broadly recited in the claims. (Figure 1)

It would have been obvious to one of ordinary skill in the art to modify either of Claim 1 of '467 or '460 to include a gas distribution apparatus comprising plural devices near the ceiling of the reactor, as taught by Ishii et al. The motivation for doing so, as taught by Ishii et al. (Column 6, Lines 3-6), would have been to uniformly supply gas to the lower processing space.

This is a provisional obviousness-type double patenting rejection.

19. Claims 49 and 50 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over Claim 1 of copending Application No. 10/646,467 ('467) in view of '559 to Kawakami et al. and Shamouilian et al., or alternatively over Claim 1 of copending Application No. 10/646,460 ('460) in view of '559 to Kawakami et al. and Shamouilian et al.

Claim 1 of each of '467 and '460 was discussed above.

In regards to Claim 49, neither expressly teaches the workpiece support pedestal recited in the claim.

'559 to Kawakami et al. teaches a workpiece support pedestal comprising a conductive wafer support plate 31 (Column 5, Lines 19-20); a grounded conductive base plate and a side wall around said support and base plates forming at least a void between said side wall and said support and base plates and a void between said support and base plates (*conductive grounded component 41 forms both a base plate and side wall, as broadly recited in the claim*; Column 5, Lines 19-33); and dielectric filler material 4 filling said void (Column 5, Lines 27-29). (Figure 1)

It would have been obvious to one of ordinary skill in the art to replace the workpiece support pedestal taught by Claim 1 of '467 or '460 with the workpiece support pedestal taught by '559 to Kawakami et al. The motivation for doing so, as taught by Kawakami et al. (Column 3, Lines 15-25), would have been to use a workpiece support pedestal capable of suppressing the generation of a residual electric charge to prevent any damage or breakage of the workpiece to be treated.

The combination of Claim 1 of '467 or '460 with '559 to Kawakami et al. does not expressly teach the bias power coupling structure recited in Claim 49.

Shamouilian et al. teaches a workpiece support pedestal (Figures 6 and 8a) comprising a conductive insert 345 coupled to a bias power generator 145 and a conductive female receptacle 375 for tightly receiving said conductive insert, said conductive female receptacle being connected to a conductive wafer support plate 105, said conductive insert and conductive female receptacle extending through a base plate 190 to the conductive wafer support plate 105, and an insulating layer 380 insulating the conductive insert from the base plate. (Paragraphs 27, 70, 71)

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It would have been obvious to one of ordinary skill in the art to modify the workpiece support pedestal taught by the combination of Claim 1 of '467 or '460 with '559 to Kawakami et al. to include the bias power coupling structure as taught by Shamouilian et al. The motivation for making such a modification, as taught by Shamouilian et al. (Paragraphs 68-71), would have been to form a reliable connection between the bias power generator and the conductive wafer support plate while electrically isolating the power supplying member from the other components of the chuck.

The combination of Claim 1 of '467 or '460 with '559 to Kawakami et al. and Shamouilian et al. just discussed does not expressly teach the lift pin assembly recited in Claim 50.

However, Shamouilian et al. further teaches that the workpiece support pedestal further comprises at least one lift pin assembly (lift pins 160a, 160b) which extends through base plate 190 and conductive wafer support plate 105, as broadly recited in the claim (Figure 6), an axial void between the lift pin assembly and the conductive wafer support plate, and a dielectric filler material 380 within the void. (Figure 6; Paragraph 71)

It would have been obvious to one of ordinary skill in the art to further modify the combination of Claim 1 of '467 or '460 with '559 to Kawakami et al. and Shamouilian et al. to include the lift pin assembly as taught by Shamouilian et al. The motivation for doing so, as taught by Shamouilian et al. (Paragraphs 28 and 71), would have been to

provide lift pins to raise and lower the workpiece from the pedestal, while preventing the formation of a plasma glow discharge within the holes through which the lift pins extend.

This is a provisional obviousness-type double patenting rejection.

20. Claim 51 is provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over Claim 1 of copending Application No. 10/646,467 ('467) in view of '559 to Kawakami et al. and Shamouilian et al. as applied to Claim 50 above, or alternatively over Claim 1 of copending Application No. 10/646,460 ('460) in view of '559 to Kawakami et al. and Shamouilian et al. as applied to Claim 50 above, and further in view of '508 to Kawakami et al. and Stimson et al.

The teachings of the combination of Claim 1 of '467 or '460 with '559 to Kawakami et al. and Shamouilian et al. were discussed above.

The combination of Claim 1 of '467 or '460 with '559 to Kawakami et al. and Shamouilian et al. does not expressly teach a fastening bolt as recited in Claim 51.

'508 to Kawakami teaches that a fastening bolt 34 is provided through all of the plates comprising a workpiece support pedestal 3. (Figure 2)

It would have been obvious to one of ordinary skill in the art to modify the workpiece support pedestal taught by the combination of Claim 1 of '467 or '460 with '559 to Kawakami et al. and Shamouilian et al. to provide a fastening bolt through all of the plates comprising the workpiece support pedestal, as taught by '508 to Kawakami et al. The motivation for making such a modification, as taught by '508 to Kawakami et al.

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(Column 5, Lines 59-63), would have been to make the plates comprising the workpiece support pedestal freely removable from one another.

The combination of Claim 1 of '467 or '460 with '559 to Kawakami et al., Shamouilian et al., and '508 to Kawakami et al. does not expressly teach that a dielectric material surrounds a portion of the bolt within the conductive wafer support plate.

Stimson et al. teaches that a fastening bolt 420 that is "RF hot" should be partially surrounded by partially surrounded by dielectric material 422 (Figure 4; Paragraph 30).

It would have been obvious to one of ordinary skill in the art to further modify the workpiece support pedestal taught by the combination of Claim 1 of '467 or '460 with '559 to Kawakami et al., Shamouilian et al., and '508 to Kawakami et al. to surround the portion of the bolt within the conductive wafer support plate, which bolt would be "RF hot" due to the RF bias power supply connected to the conductive wafer support plate, with dielectric material. The motivation for doing so, as taught by Stimson et al. (Paragraph 30), would have been to guard against electrical contact between the bolt and another conductor.

This is a provisional obviousness-type double patenting rejection.

Conclusion

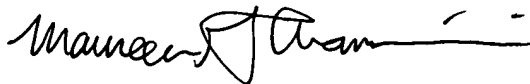
21. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Maureen G. Arancibia whose telephone number is (571)

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272-1219. The examiner can normally be reached on core hours of 10-5, Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on (571) 272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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